



# 1971

## OPERATING SUMMARY

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# GALT

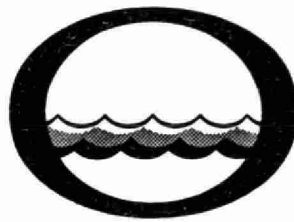
## WATER POLLUTION CONTROL PLANT

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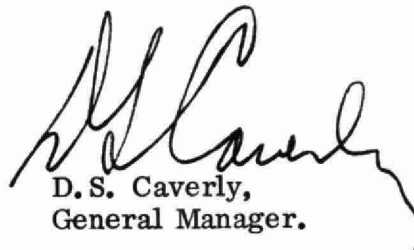


***Water management in Ontario***


Ontario  
Water Resources  
Commission

We are pleased to submit for your consideration a summary of operation during 1971 of the water pollution control plant serving your community.

This operating summary contains parameters normally used to measure plant performance and loading, as well as relevant cost data. Because of the concern over eutrophication of our lakes and of the requirement, in many parts of Ontario, to remove the major contributing factor, results of analysis for phosphorus appear in this summary.



D.S. Caverly,  
General Manager.



D.A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

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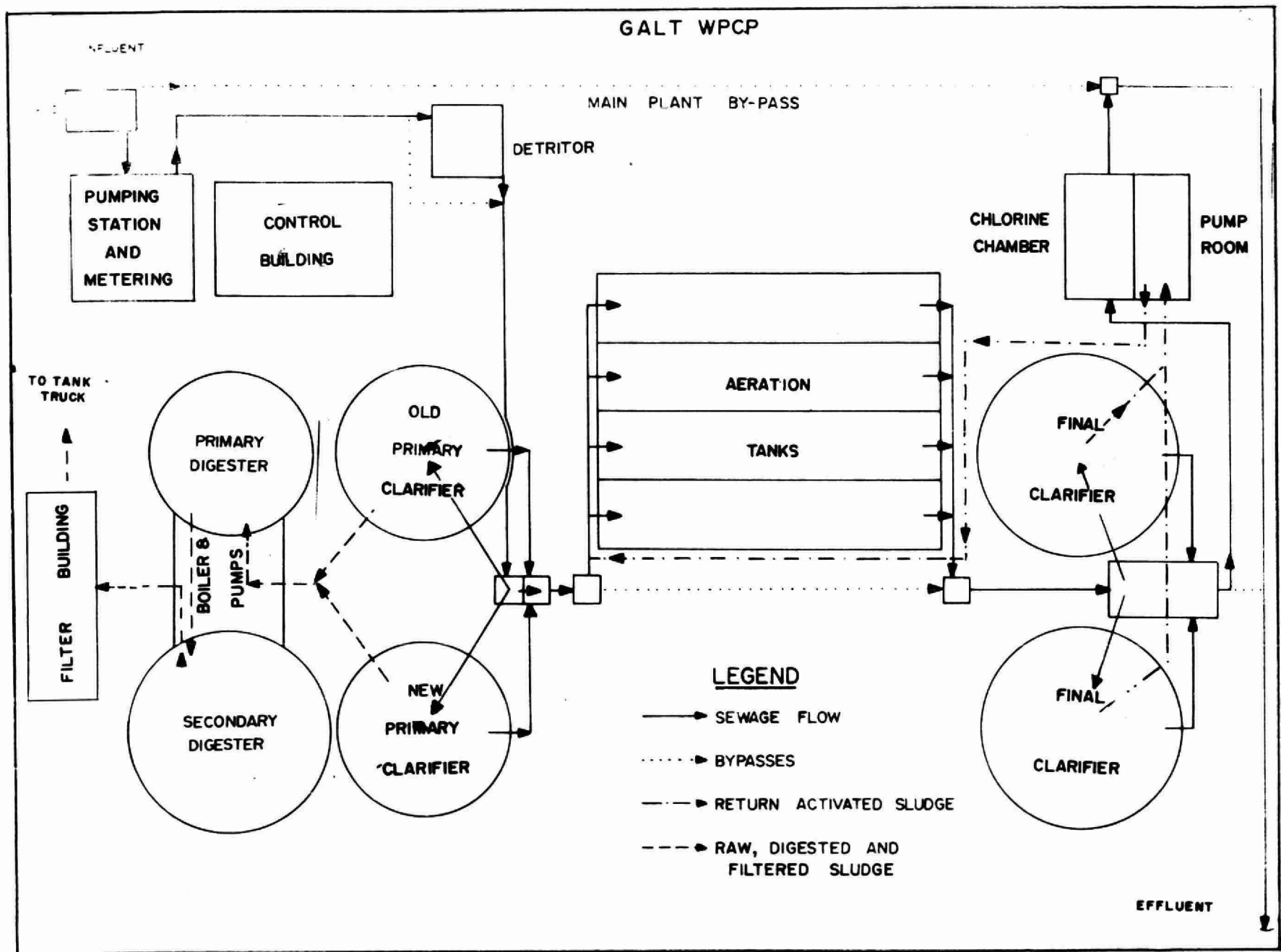
# GALT WATER POLLUTION CONTROL PLANT

operated for  
THE CITY OF GALT  
by the  
ONTARIO WATER RESOURCES COMMISSION

## 1971 ANNUAL OPERATING SUMMARY

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# DESIGN DATA

PROJECT NO. 1-0099-67

TREATMENT Activated Sludge

DESIGN FLOW 5.0 mgd

DESIGN POPULATION 34,000

BOD - Raw Sewage 250 mg/l  
- Removal 90%

SS - Raw Sewage 250 mg/l  
- Removal 90%

## PRIMARY TREATMENT

### Comminution

Type: C. P. Barminutor  
Size: One Model C (36")

### Raw Sewage Pumps

Type: Babcock-Wilcox  
Size: Three 3500 gpm @ 30' tdh

### Grit Removal

Type: Eimco Detritor  
Size: One 18' x 18' x 2' deep  
(4,000 gal)  
Retention: 1.15 min

### Primary Sedimentation

Type: (a) Dorr (old cl.)  
(b) Eimco (new cl.)  
Size: Two 60' dia x 9' swd  
50,600 cu ft or 315,000 gal)  
Retention: 1.5 hours  
Loading: Surface, 884 gal/ft<sup>2</sup>/day  
Weir, 13,250 gal/ft/day

## SECONDARY TREATMENT

### Aeration Tanks

Type: Mechanical aeration  
Single pass (5-cell)  
Size: Four 150' x 30' x 13.7'  
(234,000 cu ft or 1.46 mil gal)  
Retention: 7.0 hours

### Aerators

- Twenty Ames-Crosta

## Secondary Sedimentation

Type: Eimco  
Size: Two 75' dia x 10' swd  
(88,400 cu ft or 550,000 gal)  
Retention: 2.64 hours  
Loading: Surface, 566 gal/ft<sup>2</sup>/day  
Weir, 10,600 gal/ft/day

## CHLORINATION

- One F & P Automatic

### Chlorine Contact Chamber

Size: One 49.25' x 21.5' x 7.25'  
(46,000 gal)  
Retention: 13.25 min

## OUTFALL

- to Grand River

## SLUDGE HANDLING

### Digestion System

Type: Two-stage

Primary --

Type: Eimco draft tube mixers (2) on  
concrete roof  
Size: One 50' dia x 20' swd (30,300 cu  
ft or 189,000 gal)

Secondary --

Size: One 70' dia x 20' swd (77,000 cu  
ft or 480,000 gal)

### Vacuum Filter

Type: Eimco (cloth)  
Size: One, 380 sq ft



# '71 Review

## GENERAL

The Galt Water Pollution Control Plant is a conventional activated sludge project with a design flow of 5.0 million gallons per day. Sewage entering the plant receives primary clarification, secondary biological treatment and the final effluent is disinfected by chlorine prior to being discharged to the Grand River. Sludge removed from the sewage is stabilized by digestion prior to disposal on farm lands. Construction of the plant expansion from 5.0 million gallons per day to 8.0 million gallons per day is expected to begin in 1972.

The plant is staffed by seven men which include one superintendent, one laboratory technician, one maintenance technician and four operators.

Under the supervision of head office engineers, the plant staff operated a clean, attractive and efficient plant for the City of Galt.

## EXPENDITURES

In 1971, an estimated total of 1600 million gallons was treated at an operating cost of \$108,553.61. Cost per million gallons treated was \$67.84 and the cost per pound of BOD removed was 4.5 cents.

## PLANT FLOWS and CHLORINATION

The average daily flow was 4.4 million gallons, 15 percent less than the 1970 flow of 5.16 mgd. The average daily flow was 12 percent less than the design flow of 5.0 million gallons per day. The design flow was exceeded 37 percent of the time during the year.

An average chlorine dosage of 2.5 mg/l was required to maintain an average chlorine residual of 0.5 mg/l in the final effluent.

#### PLANT EFFICIENCY

The average BOD of the raw sewage and final effluent were 168 mg/l and 19 mg/l respectively. The plant removed an average of 89 percent of the BOD compared to 92% in 1970. The OWRC effluent BOD objective of 15 mg/l was exceeded 34 percent of the time.

The suspended solids in the raw sewage and final effluent averaged 153 mg/l and 17 mg/l respectively. The plant removed an average of 89 percent of the suspended solids compared to 87 percent in 1970. The OWRC final effluent suspended solids objective of 15 mg/l was exceeded 45 percent of the time.

#### SLUDGE DIGESTION and DISPOSAL

A total of 3.45 million gallons of sludge was pumped to the digester system during the year. The raw sludge averaged 5.8 percent total solids, of which 72 percent was volatile matter.

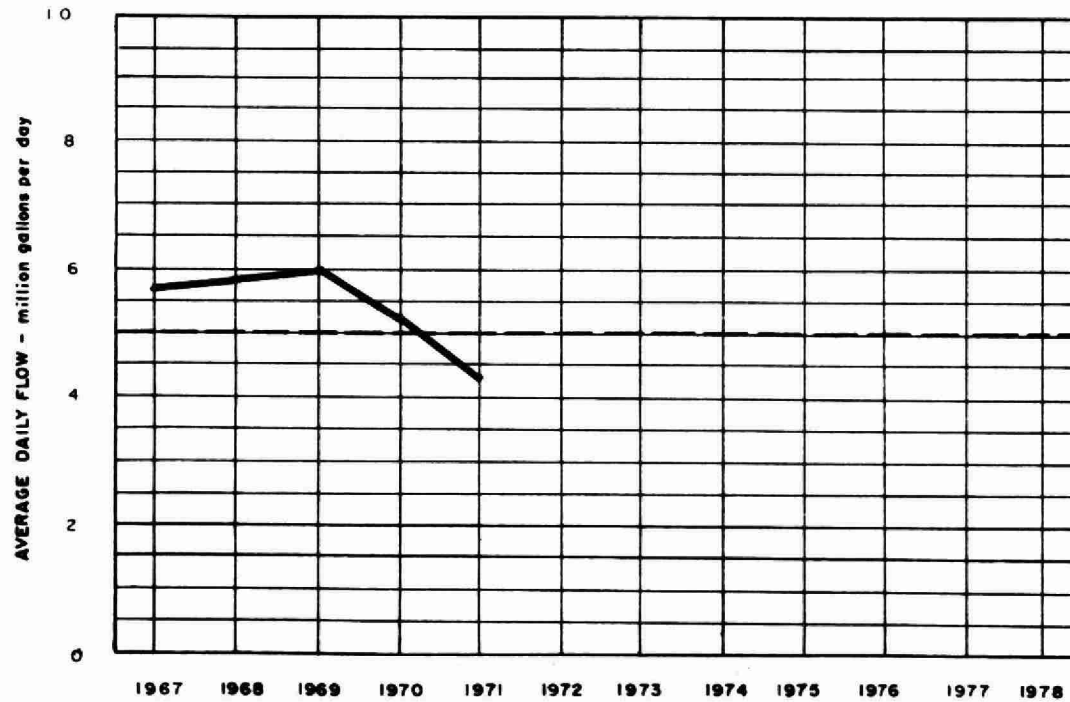
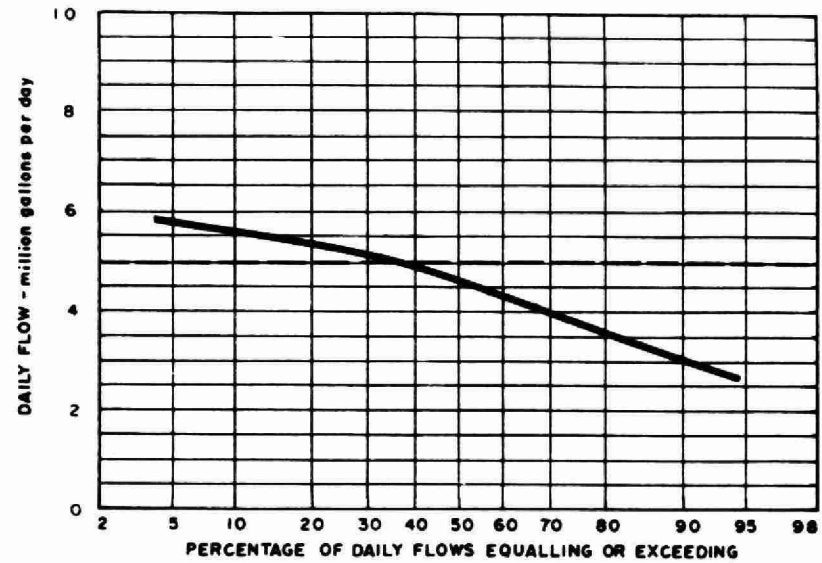
Digested sludge from the secondary digesters averaged 4.0 percent total solids, of which 62 percent was volatile matter. The average reduction in volatile matter was 39 percent.

#### CONCLUSIONS

The annual average daily flows for 1969, 1970 and 1971 were 6.0, 5.2 and 4.4 million gallons respectively which would suggest that the sewer infiltration problem is being resolved.

The plant produced an acceptable effluent comparable to OWRC objectives in 1971.

# PROCESS DATA FLOWS



## PLANT PERFORMANCE

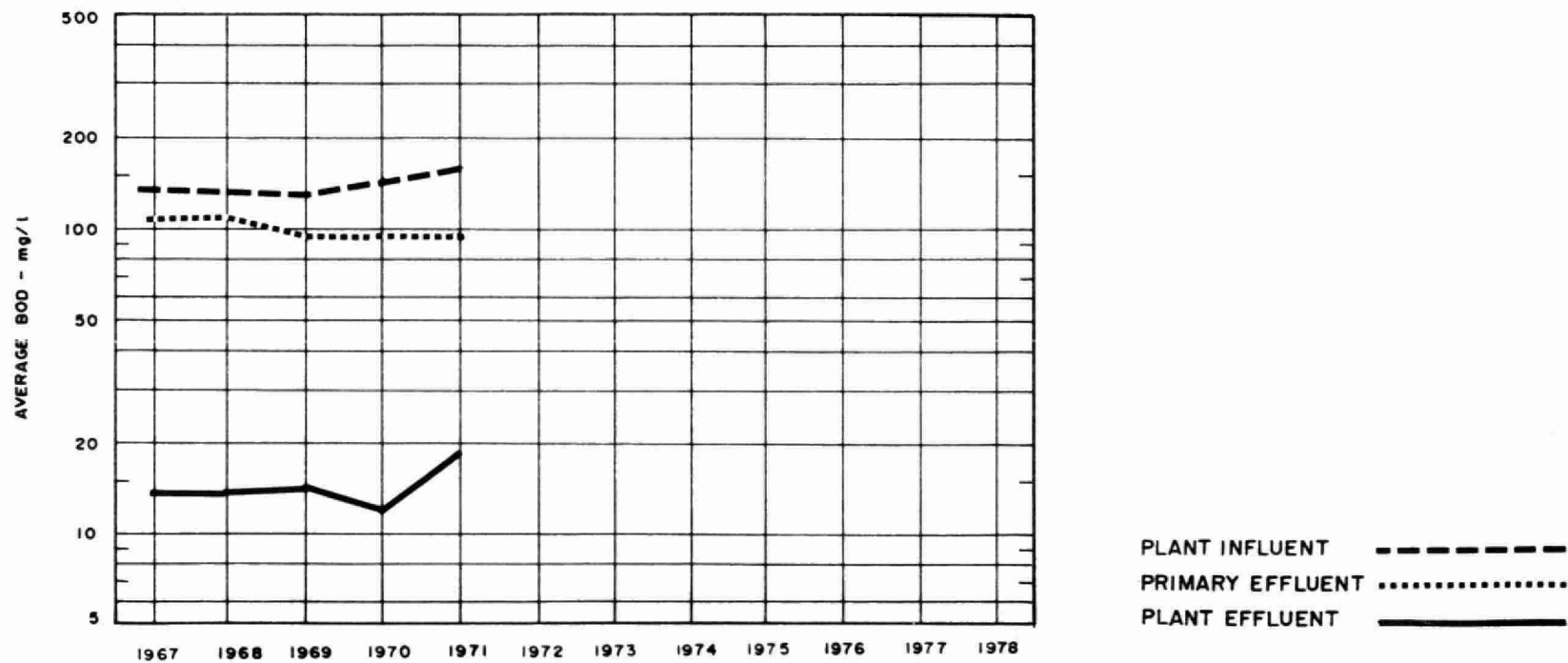
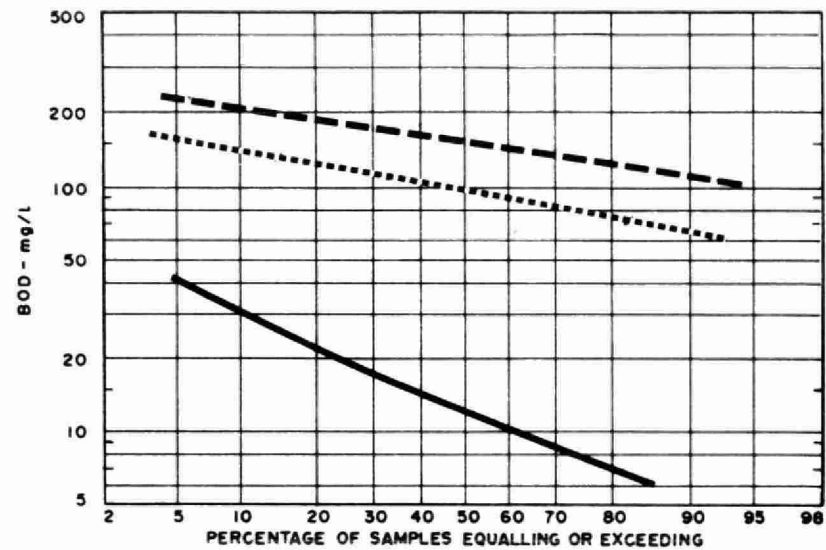
MONTH	FLOWS				BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				TOTAL PHOSPHORUS		
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	MAXIMUM RATE	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION
	million gallons	mil gal	mil gal	mgd	mg/l	mg/l	10 <sup>3</sup> pounds		mg/l	mg/l	10 <sup>3</sup> pounds		mg/l as P	mg/l as P	%
							%				%				
JAN	147.3	4.8	5.6	8.8	194	24	88	250	138	21	85	170	-	-	-
FEB	131.9	5.1	6.6	8.5	172	16	91	200	125	27	78	130	-	-	-
MAR	176.6	5.7	7.6	10.8	152	82	46	120	141	14	90	220	-	-	-
APR	143.4	4.8	6.6	8.6	141	17	88	180	122	32	74	130	-	-	-
MAY	132.0	4.3	5.3	9.8	149	13	91	180	135	17	87	160	-	-	-
JUNE	143.2	4.8	5.8	11.2	200	9	96	290	268	11	96	370	-	-	-
JULY	101.4 a	3.9	6.2	9.6	161	7	95	160	145	10	93	140	7.6	4.8	37
AUG	60.0 b	4.6	5.0	11.5	148	9	89	100	145	9	94	90	7.3	3.8	48
SEPT	119.4	4.0	5.9	11.0	125	14	89	130	136	16	88	140	6.0	4.3	28
OCT	58.5 c	3.4	4.6	9.4	263	19	93	140	179	17	90	90	-	-	-
NOV	114.0	3.8	5.2	7.9	153	10	93	160	122	17	86	120	7.3	5.5	25
DEC	121.9	3.9	5.0	10.0	178	11	94	200	152	20	87	160	6.7	5.8	13
TOTAL	1600 (est)	-	-	-	-	-	-	2110	-	-	-	1920	-	-	-
AVG.	-	4.4	7.6	11.5	168	19	89	175	153	17	89	160	7.0	4.8	31
No. of Samples	-	-	-	-	86	86	-	-	238	238	-	-	5	5	-

a - 26 days' flow

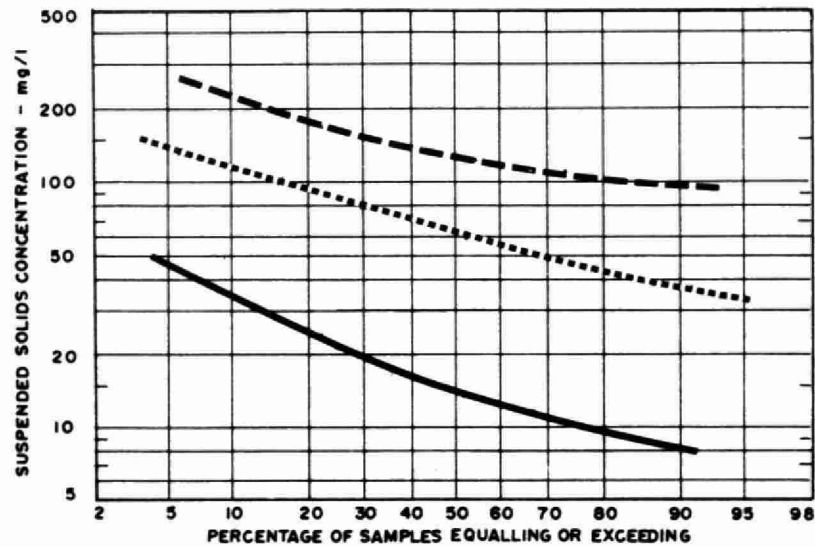
b - 15 days' flow

c - 17 days' flow

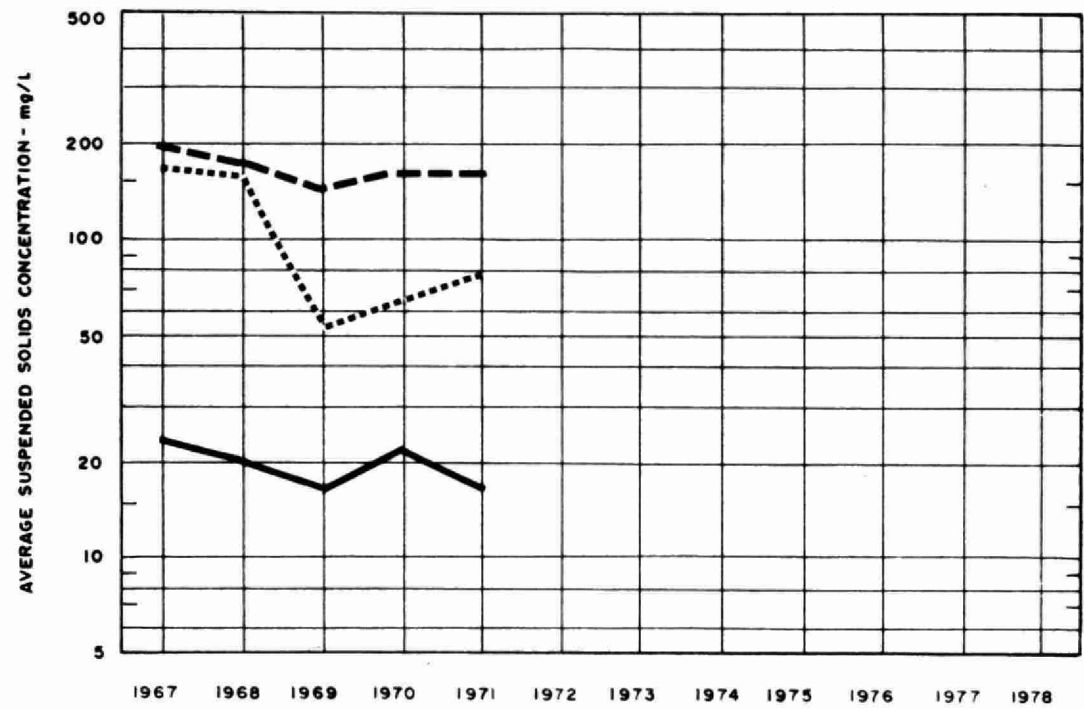
# BIOCHEMICAL OXYGEN DEMAND



# SUSPENDED SOLIDS



PLANT INFLUENT        
 PRIMARY EFFLUENT      
 PLANT EFFLUENT     

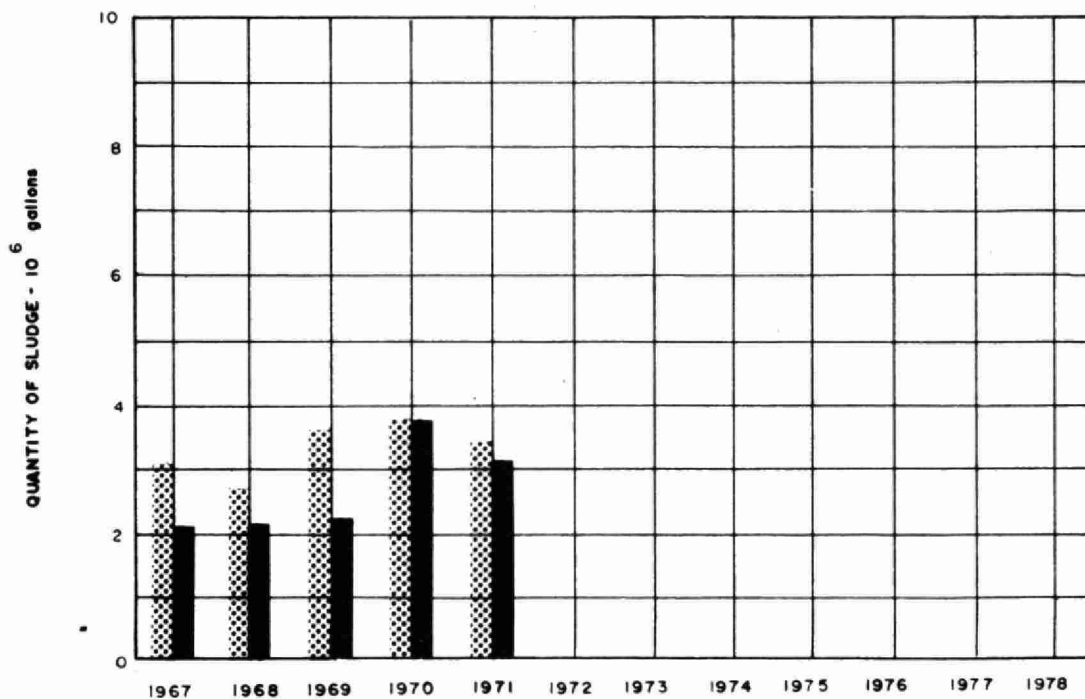
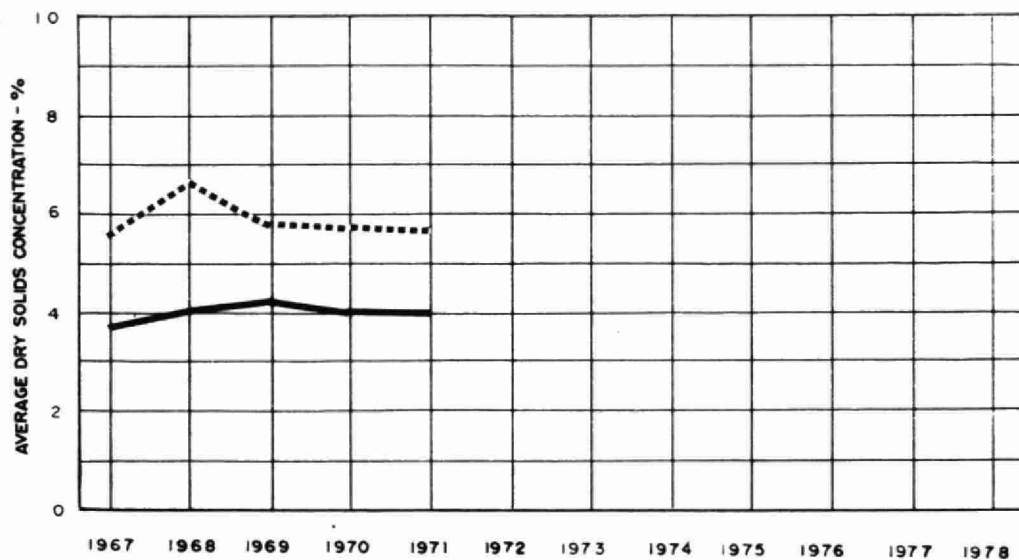


## TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL <sub>2</sub> USED 10 <sup>3</sup> pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day <sup>-1</sup>	AIR 1000 ft <sup>3</sup> lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER-NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	10	4.7	3.2	113	81	2540	.15	-	260	-	-	250	5.7	-	-	1460
FEB	27	3.9	3.0	105	71	2130	.17	-	250	-	-	340	4.8	76	-	2000
MAR	37	4.1	2.3	107	89	2070	.20	-	240	5.6	75	310	-	-	-	1850
APR	20	4.4	3.1	96	72	2090	.15	-	280	5.7	77	220	-	-	-	1260
MAY	20	4.4	3.3	130	96	1960	.20	-	280	4.9	74	200	3.6	66	-	1200
JUNE	259	4.3	3.0	99	63	2230	.15	-	290	6.8	72	320	2.8	62	-	1900
JULY	26	4.2	3.4	66	51	2290	.08	-	320	54	61	320	3.3	59	-	1890
AUG	77	4.4	3.1	74	51	1800	.12	-	300	6.6	69	310	4.0	56	-	1820
SEPT	147	4.4	3.7	82	59	1980	.22	-	310	7.1	65	190	4.1	52	-	1070
OCT	48	4.4	7.6	99	149	2200	.10	-	300	5.4	80	210	4.4	54	-	1260
NOV	46	4.6	4.0	93	61	2070	.12	-	300	4.8	79	210	3.2	62	-	1274
DEC	44	4.8	3.9	144	101	2840	.14	-	320	-	-	250	-	-	-	1470
TOTAL	761	52.4	-	-	-	-	-	-	3450	-	-	3130	-	-	-	18454
AVG.	0.5 cu. ft/mil gal	4.4	2.5	99	79	2180	.15	-	287	5.8	72	260	4.0	61	-	1530

# DIGESTION

RAW SLUDGE .....  
DIGESTED SLUDGE ———



RAW SLUDGE TO DIGESTER .....  
DIGESTED SLUDGE REMOVED ———



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